ABSTRACT

A method for controlling the shape of the area machined by a pulse of laser light on a surface, such that the shape has a desired elliptical shape with its major axis aligned in a desired direction and the length of this major axis is less than or equal to a diameter of a beam spot. The pulse is generated and focused to the beam spot within a target area. The polarization of the pulse is adjusted to be elliptically polarized with an axis of the polarization ellipse oriented in the desired direction. The ellipticity of the polarization of the pulse is adjusted such that the pulse of laser light has contours of constant machining capacity on the workpiece surface, which have a similar shape to the desired shape. The fluence of the pulse light is controlled such that the area machined by the pulse is substantially the desired shape.